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Do synaesthesia and mental imagery tap into similar crossmodal processes?

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Supplementary material

Experiment 1: Further analyses

Analyses of the ratings to the mirror-touch screening test (video clips).

The mean mirror-touch ratings to videos were first submitted to a mixed-design 3 (Group) x 3 (Body location) x 3 (Inducer) ANOVA. Analysis revealed a significant main effect of group ($F(2,27) = 20.38, p < .001, \eta^2_{gen} = 0.5$). Post-hoc Tukey HSD test confirmed that this was driven by the significantly higher ratings of the MTS group ($M = 5.30 \pm 1.26$) in comparison to the Non-MT Synaesthesia ($M = 2.54 \pm 1.57; p < .001$) and Control ($M = 2.45 \pm 1.72; p < .001$) groups.

There was a significant main effect of body location ($F(2,54) = 4.96, p = .011, \eta^2_{gen} = .02$). Post-hoc pairwise comparisons with Bonferroni correction revealed significantly higher ratings for the neck ($M = 3.73 \pm 2.23$) compared to the hand ($M = 3.25 \pm 1.93$; $p < .05$) while the difference between ratings for the neck and ear ($M = 3.31 \pm 1.99$) and hand and ear failed to reach significance ($p > .05$). There was no effect of inducer ($p > .05$) and none of the two-way interactions reached significance ($p > .05$). There was a significant three-way interaction between group, body location and inducer ($F(8,108) = 2.60$, $p < .05\, \eta^2_{gen} = .02$). Separate ANOVAs were used to examine the interaction between body location and inducer specific to each group. These analyses yielded a significant two-way interaction for the control group only ($F(4,36) = 3.46$, $p < .02, \eta^2_{gen} = .02$). However, none of the post-hoc pairwise comparisons reached significance ($p > .05$).

To examine the role of the perspective (allocentric or egocentric) of the viewed image of the hand on mirror-touch synaesthesia, the ratings to the videos of the hand were entered into a mixed-design, 3 (Group) x 2 (Perspective) x 3 (Inducer) ANOVA. Analysis revealed a significant main effect of group ($F(2,27) = 22.05$, $p < .001, \eta^2_{gen} = .54$), with higher ratings provided by the MT-synaesthesia than other groups, but no other significant effects or interactions were found (all p > .05).

Analyses of ratings to materials and object properties

An analysis of the ratings provided to the Tactile Imagery task revealed a significant interaction between Material and object property [$F(12,324) = 6.54, p < .001, \eta^2_{gen} = .05$]. Figure S1 provides an illustration of the pairwise comparisons between the materials and object properties that support this interaction.

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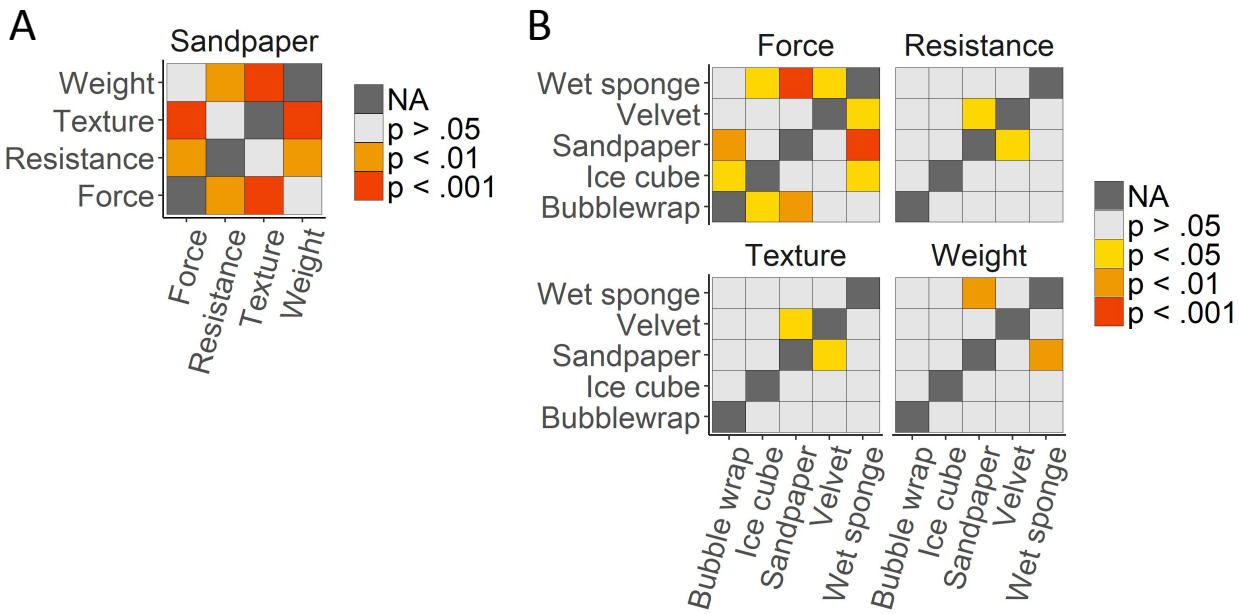

Figure S1. The matrices illustrate only those pairwise comparisons that reached significance A) between object properties to the sandpaper material and B) between the different materials according to each of the force, resistance, texture and weight object properties. Level of significance is colour coded as indicated in the legend.

Experiment 1: Procedural details

Tactile Mental Imagery (TMI) task
An example of the on-screen instructions provided to the participants for the Tactile Imagery task are shown in Figure S2 below, illustrating the specific instructions as well as visual details of the arrangement of the rating scales for each object provided (the 'wet sponge' is provided as an example only).

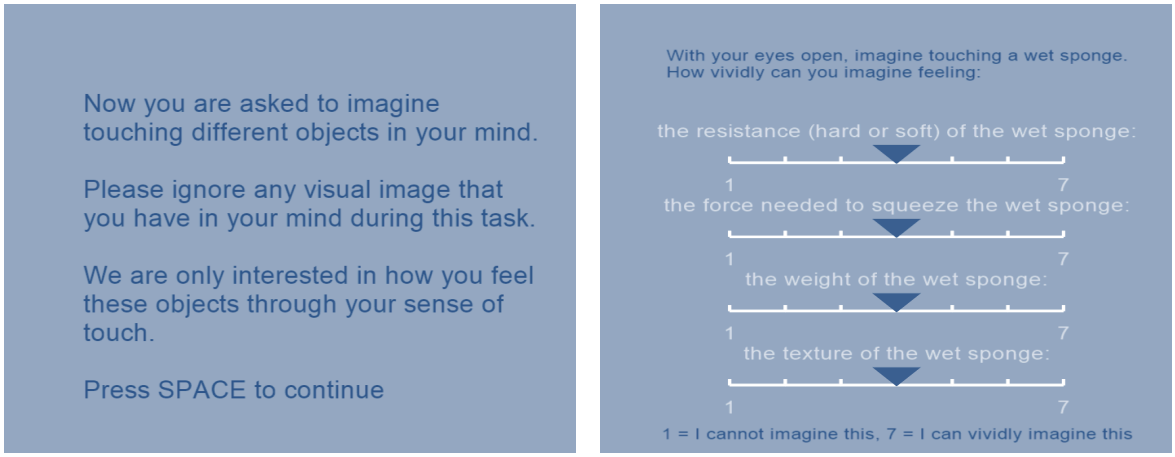

Figure S2. Example images of the instructions provided in the TMI task (left) and arrangement of the rating scales (right) provided during the task.

Somatosensory Mental Imagery (SMI) task
During the SMI task, participants were shown individual images which illustrated the body site being referred to in the task. The participant was required to refer to each body part when providing their ratings. An example of each of these individual stimuli is shown in Figure S3 below.

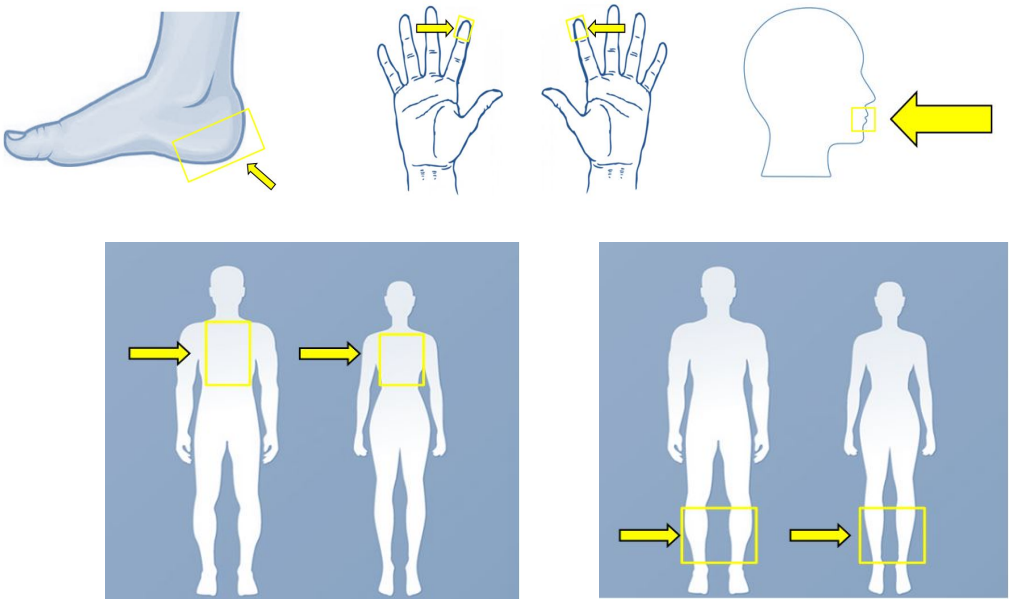

Figure S3. Example images of the stimuli used in the somatosensory imagery task, including (from top left to bottom right) ankle, index finger, lips, chest and lower leg.